

## CONTROLLER SYSTEM FOR POOL AND/OR SPA

ABSTRACT OF THE DISCLOSURE

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A control system for a pool and spa. Main line voltage is provided through a single line voltage service and a single ground fault circuit interrupter circuit, facilitating a ground fault test and simplifying installation. The control system acts as a power distribution system for controlling the pool and spa equipment, with a circuit board assembly including individual fuse protection devices and switching circuits. A test algorithm is included, wherein the control system is disabled from normal operation if the GFCI test fails. The pool operator manually enters a water fill command, and the controller system automatically opens the fill valve for a predetermined time interval, and then automatically closes the valve. An emergency disconnect switch is mounted near the bathing area, connected by low voltage wiring to the controller system cabinet. The controller system senses the emergency switch closure and disconnects line voltage to the line voltage loads. The emergency switch closure also remotely induces a ground fault, tripping the GFCI. A sensing circuit allows the controller system to sense the presence of the emergency switch system, and issues a warning and prevents normal operation of the pool and spa system if not connected. A gas pressure sensor monitors the natural gas line, and the heater is disabled and a warning given under low pressure conditions. Abnormal filter backpressure triggers a warning when the filter needs service. A temperature sensor has parallel sensing elements in a common housing to provide separate sensing circuits.